

Abstract of the Disclosure

A process and system for depositing a carbon- and transition metal-containing thin film on a substrate involves placing a substrate within a reaction space and sequentially pulsing into the reaction space a transition metal chemical and an organometallic chemical. Following each chemical pulse, the reaction space is purged, and the pulse and purge sequence is repeated until a desired film thickness is obtained. A preferred deposition process uses atomic layer deposition techniques and may result in an electrically conductive thin carbide film having uniform thickness over a large substrate area and excellent adhesion and step coverage properties.